CPU determines if the stroke is part of a multiple stroke gesture by checking if an additional stroke is entered within a predetermined distance of the first received stroke and within a predetermined period of time following the entry of the first stroke. For example, a user enters the lower portion of a bracket gesture and enters the upper portion of the bracket as separate strokes. If the upper portion is entered within a predetermined distance from the lower portion and if the upper portion is entered within a certain amount of time following the entry of the lower portion, then the CPU will assume that it is a multiple stroke gesture.

If the stroke is determined to be part of a multiple stroke gesture in step **220**, then step **222** is implemented. In step **222**, the previously-entered gesture portions of the multiple stroke gesture are added to the newly-inputted stroke. All of the strokes of the gesture are thus combined into a single gesture and are treated henceforth as a single stroke. The CPU assumes that a multiple stroke gesture does not include the circle-type gesture of step **76'**, and thus the process continues to step **86'** and the fizzy gesture recognition steps.

If the stroke is determined not to be a multiple stroke gesture in step **220**, then the process continues at step **76'** with the circle-type gesture recognition. The remaining steps of flow diagram **70'** are similar in function and implementation to the corresponding steps described with reference to FIG. **3**.

Although only one embodiment of the present invention has been described in detail, it should be understood that the present invention may be embodied in other specific forms without departing from the spirit or scope of the invention. For example, although one form of the invention has been primarily described with reference to circle-type gestures, it is equally suitable for use with other geometrical shapes. Similarly, other gestures besides the bracket and pigtail gestures described herein may be recognized by the present form of the invention, including letters and other symbols. Further, the described process for correlating a normalized stroke with a gesture prototype is only one of several possible correlation methods. Therefore, the present examples are to be considered as illustrative and not restrictive, and the invention is not to be limited to the details given herein, but may be modified within the scope of the appended claims.

What is claimed is:

1. A method for recognizing a gesture input on a display screen for a computer system, the method comprising the steps of:

receiving a stroke input by a user onto a computer screen, the stroke being represented as a string of points;

smoothing said stroke by reducing the number of points that represent the stroke such that the points of the smoothed stroke are located at least a threshold distance apart from one another;

calculating angles between adjacent segments of said smoothed stroke and calculating derivatives of said angles; and

determining whether said stroke substantially represents an ellipse, the ellipse determining step utilizing said angles and said derivatives of said angles to determine whether said stroke substantially curves in one direction or curves in more than one direction, wherein said stroke is not considered to substantially represent an ellipse when said stroke does not curve in one direction, and summing said derivatives of said angles and checking whether said sum is within a predetermined range of values, wherein said stroke is not considered to substantially represent an ellipse when said sum is outside said range of values.

2. A method as recited in claim **1** further comprising the step of determining whether said smoothed stroke includes at least a predetermined minimum number of points and wherein said calculating and ellipse determining steps are only executed when said smoothed stroke includes at least the predetermined number of points.

3. A method as recited in claim **1** wherein said step of smoothing said stroke includes the substeps of:

calculating a position for a new point that is positioned between two adjacent points in the stroke that are separated by less than the threshold distance; and

replacing the two adjacent points that are separated by less than the threshold distance with said new point.

4. A method as recited in claim **3** wherein said steps of calculating a position and replacing said two adjacent points with said new point are repeated until all of the remaining points in the stroke are separated by at least the threshold distance.

5. A method as recited in claim **4** wherein the weight given to the location of a specific new point that is to be replaced as part of a subsequent repetition of the new point position calculating and adjacent point replacing substeps is proportional to the number of points that are represented by the specific new point.

6. A method as recited in claim **3** further comprising the steps of:

determining whether an ink object on a computer screen is substantially overlapped by said smoothed stroke; and

selecting said ink object when said ink object is overlapped by said smoothed stroke and said smoothed stroke substantially represents an ellipse.

7. A method as recited in claim **6** wherein said stroke and said object each have an associated bounding box, and wherein an object is substantially overlapped by said smoothed stroke when said bounding box of said stroke substantially overlaps said bounding box of said object.

8. A method as recited in claim **1** wherein said step of determining whether the stroke substantially represents an ellipse further includes the substep of determining whether a point on said stroke that is within a predetermined portion including an end point of said stroke is within a predetermined distance of an opposite end point of said stroke, wherein said stroke is not considered to be an ellipse gesture when said point is not within said predetermined distance of said opposite end point.

9. A method as recited in claim **8** wherein the predetermined range of values is about 6 to 8.5.

10. A method as recited in claim **1** further comprising a step of determining whether said stroke is part of a multiple stroke gesture, and adding said stroke to stroke portions previously input when said stroke is part of a multiple stroke gesture.

11. A method of interpreting a gesture input onto a display screen associated with a pen-based computer system, the method comprising the steps of:

detecting a pointer-created stroke input by a user onto the computer screen;

processing the stroke for gesture recognition, the stroke processing step resulting in a series of line segments formed between adjacent points that define the stroke;

calculating the angles formed between adjacent segments of the processed stroke and derivatives of said angles;

determining whether a first selected point within a predetermined portion including an end point of said stroke is within a predetermined distance of a second,